MEDICAL REPORTS ON SOLDIERS DISCHARGED FROM THE ARMY FOR THE CONDITIONS KNOWN AS "D.A.H." AND "V.D.H."

BY

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(From the Sobraon Military Hospital, Colchester.)

THIS article forms a chapter of a small book intended in the near future for publication as an aid to officers of discharging and pensioning boards.* The rapid march of international events and the prospect of early demobilization renders the earlier publication of this chapter desirable. It has been submitted in its present form and fully discussed with the proper authorities, and their suggestions have been embodied in it. Its publication is in a form which expresses the matured views of the staff of the Sobraon Military Hospital, a hospital which deals exclusively with the "D.A.H." and "V.D.H." cases.

ARMY FORM B 179A AND Z 22 AND PENSION FORM A 36/C.

The construction of answers in Army Form B 179A is one of the most responsible tasks which falls to the lot of the medical officer in charge of the case and of those who sit upon the discharging boards. Upon the correctness of the return depends the fair treatment of the discharged soldier and the expense involved by the State. Hasty returns entail endless trouble to the Pension Boards and seriously cripple the efficiency of their work; in the future they will entail serious hardships to individual men, and serious and unnecessary inroads upon the public purse. The State can afford to give and to give generously to the men who have served it, but the amount which can be given has a limit, and it is the duty of the medical profession to see that it is justly distributed; the system of distribution should be as uniform as possible.

I propose here to discuss some of the more important considerations which must be weighed by medical officers before they can efficiently fill up these forms, confining myself to the cases classed in the "heart" group. It will be convenient to do so under the headings of the separate questions formulated.

QUESTION 11. *Date of origin of disability.*

In giving the date of the origin of the trouble in "effort syndrome" cases,† the date at which the first symptoms were experienced should be entered. In half the cases this answer will be "in civil life" with or without an actual date. The date of origin should be ascertained during the patient's stay in hospital and not after his discharge has been announced. A long history, as the men well know, makes for boarding as unfit; but the same history decreases the awards of the Pension Board. A dilemma of this kind stimulates a truthful answer.

In mitral stenosis the onset of symptoms may be used, providing that the symptoms started in civil life. If the symptoms arose during the period of service the answer is more difficult to give. It may be taken that an early mitral stenosis is of at least three years' standing, that a fully-developed stenosis is of at least five years' standing. The condition develops very slowly. Stenosis fully developed in 1918 is a pre-war condition; early stenosis is not necessarily so.

If, therefore, there is no account of rheumatic fever or chorea in the civil history, then the benefit of the doubt should be given to the man in an early case, and the date should be entered for the war period; but if there is a rheumatic history dating shortly prior to enlistment, the mitral stenosis may be presumed to have originated at that time. The medical officer is on his safest ground when in early cases a history of rheumatic fever antedates the board by three or five years, and when in fully developed cases the rheumatic fever antedates the board by some five to ten years.

In aortic disease the estimate of date of origin, when the symptoms do not antedate enlistment, should be given as the date of rheumatic fever or syphilis* in the history. But if, as often happens, there is no such history of infection and the symptoms are of recent origin, then the decision should go in the man's favour, and a recent date should be entered (onset of symptoms). As opposed to mitral stenosis, aortic defects often develop quickly in rheumatic disease.

Similar considerations apply in the case of cardiac enlargement and of arterial disease and aneurysm, as in mitral stenosis and aortic disease, in judging the date of origin of the disability. Serious disturbances of rhythm should always be dated from the first onset of symptoms.

QUESTION 13. *Give concisely the essential facts of the history of the disability, etc.*

This question is usually answered with unfortunate brevity. In "heart" cases it should always contain (1) a note on the man's capacity for exercise, games, work in school-life or at any other relevant dates prior to enlistment. (2) A full statement with dates of relevant infections. (3) Date of enlistment. (4) Length and tolerance of training and its type. (5) Length and character of duty performed. (6) A brief history of symptoms, with a note on any event to which the symptoms are dated.

QUESTION 14.† *State whether the disabilities are* (a) *attributed to or* (b) *aggravated by:* (i) *Service during the present war;* (ii) *previous active service;*‡ (iii) *climate in pre-war service;* (iv) *ordinary military service before the war; or* (v) *serious negligence or misconduct on the man's part.*

The answers to the questions under (*a*) should conform to those to Question 11, already considered. If the origin of the condition dates from rheumatic fever, gassing, etc., it should be stated clearly. The only entry which can occur, except quite rarely, under (v) is a history or sign of venereal disease; such a history is relatively uncommon in military "heart" cases; and in syphilitic disease of the heart the disease is usually of long standing. Under (*b*) the answer is usually to be given in the affirmative, for almost all "effort syndrome" cases are aggravated by service (exceptions are most frequent amongst cases of the constitutional type in which service has been of short duration and the duties light), and most cases of real heart disease have also to be considered aggravated unless the term of service has been quite short.

QUESTION 14 (*a*). *If not due to any of these causes, to what specific condition do you attribute it?*

The answer should be: (1) "not applicable" where the disability is due to one of these causes; (2) "constitutional" where the disability has arisen gradually or from uncertain causes in civil life; or (3) name the infection or other event from which the symptoms or lesion are stated to have arisen.

QUESTION 15.§ *What is his present condition?*

The observed symptoms, the size of the heart, the presence of thrills or murmurs, the presence of a grave irregularity, should be noted, and in all instances a note should be made on the observed tolerance of exercise.

QUESTIONS 21–22 (*a*).

These are answered by the discharging board on the same lines as the answers given to Questions 15, 14, and 14 (*a*) by the medical officer.

QUESTION 23. *Is the disability in a final stationary condition?*‖ *If not,* (a) *How long is the present degree of disability likely to last?* (b) *If the present degree of disability is not likely to last twelve months, can a further assessment at a reduced rate be made? etc.*

The answer to the first part of this question in "heart" cases is almost always in the negative. Under (*a*) the answer, in all structural heart cases, is "permanent"; in the remaining cases the answer should be "six," "nine,"

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* *The Soldier's Heart and the Effort Syndrome.* By Dr. T. Lewis. To be published at an early date by Messrs. Shaw and Sons, Fetter Lane, E.C.4.

† "Effort syndrome case" and "D.A.H." may be read as synonymous for pension purposes.

* A positive complement fixation test in an aortic case usually indicates old-standing disease of the aorta, usually of not less than five years' standing, if the aortic disease is judged to be syphilitic.

† Question 10 of Form Z22 is answered similarly.

‡ Military service abroad and before August, 1914.

§ Question 2 of Form A 36/C is answered similarly.

‖ Question 3 of Pension Form A 36/C and Question 11 of Form Z22 are similarly answered.

or "twelve months."* Under (*b*) the answer for "heart" cases should be in the negative. All "heart" cases in which the duration of the malady is considered temporary or uncertain should come up for re-examination.

DEGREE OF DISABLEMENT.

QUESTION 24 (*a*).† *What is the degree of disablement at which, in the Board's opinion, he should be assessed at present, independent of hospital or other treatment?* (Degrees of disablement should be expressed in the following percentages: 100, 80, 70, 60, 50, 40, 30, 20, less than 20, or *nil*.)

In answering this question there are two considerations. The first is an estimate of the man's actual physical capacity for work without distress.‡ The second consideration is the advisability of his engaging in such work; thus a man may have the strength to accomplish a task, but his condition may be such that the work endangers his health or his life.

"*Effort Syndrome*."

The physical capacity of such cases as are discharged permanently unfit from the army is reduced by an amount which may be computed from actual observations on the exercise tolerance of such patients, while in hospital, and from the amount and character of work of which they are capable on returning to civilian life. When any complete group of "effort syndrome" cases is considered, it is found that 50 per cent. are discharged as unfit within twelve months of their first admission to hospital. The exercise tolerance of the men in the group is very variable. On leaving hospital it is gauged as normal or reduced insufficiently to depress materially their value in the labour market in 20 per cent.; it is reduced to the extent that there is appreciable difficulty in taking five-mile route marches and in doing stiff thirty-minute exercises in the next 30 per cent.; it is so reduced as to render the men incapable of such marches and exercises in the next 30 per cent.; it is reduced so that anything but very light physical work is precluded and so that there is discomfort in walking one to two miles daily in the last 20 per cent. in the average; from the observations we may gauge the disability of the groups discharged as permanently unfit (namely, the last 30 per cent. and 20 per cent. of the whole) as not far short of 40 and 60 per cent. respectively.

The capacity for work as judged by return to occupations forms a serviceable check to the observed tolerance in hospital. In a group of 97 men discharged unfit as "D.A.H." cases only 8 were unoccupied less than nine months later, and this by reason of ill health. The average working hours of the group, according to the men's own statements, was forty hours per week, or almost six 7-hour days. Now it is true that in this period of nine months there had been improvement in the health of some of these men, as seen in the accompanying table; but according to their own statements it had been only slight, such improvement as occurred being largely attributable to return to the home life and to the removal of the threat of duty overseas. Despite these relatively good hours, however, the capacity for work was clearly reduced. The 7-hour day is not to be compared to the 8-hour day of the heavy trades. The men worked for the most part in light or sedentary occupations, and there had been a good deal of movement towards lighter work amongst them. The character of the work before and after serving is shown in the accompanying table.

Men originally in heavy employments pass in the main into lighter employments; so do those originally on moderately heavy work, though to a lesser extent. Amongst the men originally employed on light or sedentary work the capacity for work is but little changed by their term of army service. The hours of work are of chief importance in showing that the amount of work given by them to the service, before they leave it, is to an extent an unreliable index of their capacity. A man from whom the army can obtain only an hour's work, will work seven the moment he is subject to the wage-earning stimulus.

Numbers of Men engaged in Work of Different Grades.

Work Before Serving.		Work After Serving.	
Heavy	27	Heavy	7
		Moderate...	8
		Light or sedentary	10
		None	2
Moderate	27	Heavy	1
		Moderate...	11
		Light or sedentary	13
		None	2
Light or sedentary	43	Moderate...	1
		Light or sedentary	38
		None	4
Total	97	Total	97

The disability is to be judged in "effort syndrome" cases on physical capacity alone. The employments which the men take up do them no injury; on the contrary they are beneficial, as evidenced by the improvement, slight though it be, in the group as a whole. Inquiries have clearly elicited the fact that there is improvement. The actual replies received from 104 (out of 109) men questioned within nine months of discharge may be tabulated:

Symptom Change after Discharge.

Very much improved	4
Much improved	8
Slightly improved	30
Unchanged	56
Slightly worse	4
Decidedly worse	2

We have seen very remarkable improvement in isolated instances, in men coming to report themselves, but in the group as a whole it is no more than slight.

The disability of "effort syndrome" cases with fair exercise tolerance may be fairly placed at 20 per cent. or less, and in those with poor exercise tolerance at 30 to 40 per cent. Exceptionally it may be placed as high as 50 or 60 per cent. in cases where development is poor or where a history of rheumatic fever is given. The group showing poor exercise tolerance is the only group which should, but is not the only group which will, come before invaliding and pension boards to any extent until demobilization begins.

In the average, the assessment of the disability at the first re-examination of the pensioners should fall away by some 10 or 20 per cent., if this re-examination falls at the end of nine months, for during the first nine months health will improve.

Mitral Stenosis.

In early and uncomplicated cases of mitral stenosis (by which I mean stenosis of such degree that the characteristic murmur is present on occasion only, or only on lying down or after exercise) the exercise tolerance is often quite normal; many men with this valvular defect have spent months on front line work, have been in heavy fighting, and have been little the worse for it. In early cases there is usually no reduction of physical capacity for work, but all such cases run risk when engaged in heavy work, and it is not advisable that they should be so engaged, despite good exercise tolerance. A developed mitral stenosis, even if the exercise tolerance is good, is a serious defect; the prospect of life is considerably reduced. Such a lesion may be taken to indicate that the heart as a whole has been invaded. That is, indeed, the chief prognostic significance of mitral stenosis generally; the heart muscle is rarely sound. Where there is a developed stenosis, as indicated by a diastolic murmur or thrill constant in all postures, or where early stenosis is combined with poor exercise tolerance, the disability should be assessed highly (the detailed assessments are given in tabular form). The other chief factors of significance in gauging the extent of disability are: Enlargement of the heart, venous engorgement, and untreated fibrillation of the auricles. The presence of either of these three complications should place the assessment very high. If two or more are found in combination the disability is almost total. Fibrillation of the auricles is often the immediate precursor of heart failure in these patients; the failure may be warded off for some while by treatment and the disability temporarily reduced. As a general rule, a mitral stenosis case which shows

* Whenever possible, one of the longer periods should be entered; in entering a longer period in an "effort syndrome" case, the total disability may be reduced by 10 per cent. in the average for anticipated improvement.

† Question 4 of Pension Form A 36/C and Question 12*a* of Form Z22 are to be answered on similar lines.

‡ The basis of the estimate is to be the man's physical capacity as compared with that of the ordinary healthy man of the same age. It does not vary simply with his earning capacity, however, since pension is not merely a recompense for impaired p wer of earning a livelihood, but is also a compensation for loss of the amenities of life.

enlargement of the heart and venous engorgement is in a worse way than is a similar case in which untreated fibrillation is added. For in the last case the muscle of the heart is sounder, bearing as it does a greater burden, yet showing the same embarrassment.

Aortic Disease.

Much the same considerations apply in aortic disease as in mitral stenosis. But aortic disease is to be regarded as the more serious lesion, and I assess it 10 per cent. higher throughout. It is not to be forgotten that the base of the aorta and the coronary arteries are frequently involved. In some patients with aortic disease exercise tolerance is perfect; many soldiers have fought in the front line with this lesion, and without mishap; some cases of aortic disease live to a good old age. But these are cases in which the lesion, as judged by the state of the pulse, is slight, and in which there is no material cardiac enlargement or other complicating factor. The presence of a poor exercise tolerance is, as a rule, a clear indication of the seriousness of the lesion; the presence of much cardiac enlargement, of serious engorgement, or of angina pectoris is ominous. In assessing aortic disease in the accompanying table I divide it into "slight" or "developed." By slight aortic disease I mean such disease as is evidenced by an early diastolic murmur at the base without there being any material alteration of the pulse. By developed aortic disease I mean full regurgitation with a collapsing pulse, or aortic regurgitation with stenosis.

Enlargement of the Heart.

Many soldiers discharged the army exhibit cardiac enlargement in the absence of a valve lesion or other obvious cause to account for it. Where such enlargement is more than slight (slight hypertrophy such as is indicated by a maximal impulse 4½ in. from the nipple line or *definitely beyond* the nipple in the fifth or sixth spaces) or when it is associated with poor exercise tolerance, the condition forms a serious disability. If untreated fibrillation is present, if a venous engorgement is added, then the disability is very similar to that found in similar cases in which mitral stenosis is also present; I mean to say that the addition of mitral stenosis to such a picture does not materially increase the disability.*

Arterial Disease.

Thickening of the peripheral arteries is often local, and when local does not impair the capacity for work; a given grade is of less significance as age advances. The chief symptoms of arterial disease, the chief disabilities to which it gives rise, are due to impaired nutrition of important organs such as the heart, brain, or kidneys. In an arterio-sclerotic man, therefore, in addition to the exercise tolerance, the signs of an enlarged heart, of high blood pressure, or renal involvement, are those which chiefly gauge the degree of disablement. Signs of cardiac failure, with or without fibrillation of the auricle, may be present; in such the condition is usually terminal.

Aortic aneurysm or *grave angina pectoris* naturally involves very high grades of disability.

Fibrillation of the auricles has been known to last for as long as thirty years, but in its presence the duration of life is rarely more than ten years. It is rarely uncomplicated. Standing by itself it should be the ground of assessing the disability highly. It is recognized by the presence of gross pulse irregularity which does not disappear when the heart rate is raised to 140 or over by any means. The actual capacity for work may be greatly increased by appropriate treatment.

Auricular flutter is very rare in soldiers. It is only to be diagnosed with certainty by special forms of examination. It is to be suspected when pulse rates of 140 to 160 are exactly maintained under varying conditions of posture and exercise. Persistent flutter and fibrillation may both be taken to signify myocardial involvement. In assessing disability they may be treated alike.

Paroxysmal Tachycardia.—When the attacks are mild and infrequent and the condition is uncomplicated (the usual picture), the disability is slight. More severe attacks debar the patients from heavy work, even though the attacks are infrequent, for such work will often provoke further attacks. Severe and frequent attacks prohibit heavy and moderately heavy work. In gauging these disabilities I treat the condition as uncomplicated by obvious cardiac lesions. If so complicated, paroxysmal tachycardia may be assessed on the same lines as fibrillation.

Mitral Regurgitation.—This condition has been deliberately omitted from the table of disabilities. The diagnosis of regurgitation is uncertain; its cause when diagnosed is not easy to ascertain. In itself it does not lower exercise tolerance or in any way disable. The assessment of the disability, when regurgitation is thought to be present, should be based exclusively on associated factors, such as exercise tolerance, enlargement of the heart, a history of rheumatic fever recent or repeated, fibrillation, aortic disease, etc. Where exercise tolerance is normal and there is no history of rheumatic fever, no assessment is required. In cases which give a history of rheumatic fever and show a good exercise tolerance it may be wise to assess at 20 per cent. or less. Cases uncomplicated by enlargement, but showing only fair exercise tolerance, fall in the "effort syndrome" group and start with an assessed disability of 20 per cent.; if a history of rheumatic fever is present they obtain an extra 10 per cent., thus rising to the level of early mitral stenosis with good exercise tolerance. If slight enlargement is added to regurgitation, the assessment is from 20 to 50 per cent. (see enlargement group in the table), according to the exercise tolerance and the presence or absence of a history of rheumatic fever. Consideration of the murmur itself is not only unnecessary in assessing, but would lead to endless difficulty in fair assessment.

Table of Percentage Disabilities.

	Per Cent.
Effort syndrome (with or without systolic apical murmur):	
With fair exercise tolerance	20 or less
With poor exercise tolerance	30 to 40
For history of recent or repeated rheumatic fever or for poor development	add 10
Mitral stenosis:	
Early and uncomplicated with good exercise tolerance	30
Early and uncomplicated with poor exercise tolerance	50
Developed uncomplicated with fair exercise tolerance	50
Developed uncomplicated with poor exercise tolerance	60
Developed with enlargement	70
Developed with enlargement and venous engorgement	80
Developed with fibrillation (untreated), but no enlargement	70
Developed with enlargement and dropsy	100
Aortic disease:	
Slight and uncomplicated with good exercise tolerance	40
Slight and uncomplicated with poor exercise tolerance	60
Developed with much enlargement	80
Developed with enlargement and engorgement or angina; fully developed with enlargement and renal disease	100
Enlargement:	
Slight but definite with good exercise tolerance	20
Slight but definite with poor exercise tolerance	40
Moderate with poor exercise tolerance	50
Great with poor exercise tolerance	70
For untreated fibrillation or venous engorgement	add 30
For history of rheumatic fever (recent or repeated)	add 10
General arterial disease:	
Uncomplicated with good exercise tolerance	20
Uncomplicated with poor exercise tolerance	40
With moderate cardiac enlargement	50
With high blood pressure / With grave angina pectoris / With great enlargement / With renal disease / With venous engorgement / With or without fibrillation	70 to 100
Aortic aneurysm	70 to 100
Angina pectoris	50 to 100
Fibrillation of auricles (or persistent flutter):	
Without signs of cardiac failure	50
With fair exercise tolerance and untreated	50
Paroxysmal tachycardia:	
Mild and infrequent attacks	less than 20
Severe and infrequent attacks	30
Severe and frequent attacks	50

QUESTION 24 (*b*).* *In case of aggravation or where there is any evidence that there was a disability on entry, what in your opinion was the degree of disablement which existed at the time of joining the army?*

The answer to this question should be expressed as a percentage. The chief points for consideration in "effort syndrome" cases, which have arisen before enlistment,

* It is not stenosis of the mitral valve which chiefly disables, but the injury to the heart muscle which is associated with this lesion.

* Question 12 *b* of Form Z 22 is answered similarly.

are (*a*) an estimate of exercise tolerance immediately before enlistment, (*b*) the effects of infection, shell shock, gassing, etc., after joining, or any other event happening on active service which is known notably to aggravate. In cases of real heart disease arising before enlistment aggravation may always be considered to have occurred where any material service has been given. Precisely the same points come up for consideration as in the "effort syndrome" group. In general, in a case of heart disease, the lowest percentage disability given for the diagnostic group to which the man belongs in the disability table may be taken as the *maximal* (though not necessarily the minimal figure) for the disability at *enlistment*. This is recommended because although a lesion, such as early and uncomplicated mitral stenosis or aortic reflux, may have passed unnoticed by the recruiting board, being often in the pre-diagnosable stage, such lesions, in the presence of complications, could scarcely have remained undiscovered. The complications may therefore in general be viewed as "aggravations." Thus, in a case of mitral stenosis arising in civil life the disability on enlistment should be placed no higher, though it may be placed lower, than 30 per cent.

Where there is uncertainty the benefit of the doubt should be accorded the man, and the original disability fixed at a low percentage. If in arriving at the full disability, 10 per cent. has been added for poor development or for rheumatic fever *acquired before serving*, then it must also be added to the assessment of disability on joining.

THE COMMON FACTOR IN DISORDERED ACTION OF THE HEART.

BY

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The group of cases spoken of as disordered action of the heart (British), neuro-circulatory asthenia (United States), effort syndrome (Dr. T. Lewis), irritable heart of soldiers (Da Costa), includes those having the common symptoms of breathlessness, palpitation, precordial pain, and exhaustion. Additional symptoms suggesting the functional involvement of every system in the body may be present, but, on account of their prominence, those referring to the circulatory and the nervous systems are the most evident.

That these two systems are disturbed is shown by the anxious, listless expression, the nervousness, tremor of the muscles, increased reflexes, dizziness, giddiness, or fainting, and changes in the blood pressure and pulse. We could subdivide the cases into groups, such as the psychic, cardiac, involuntary neuro-muscular, or any other which one may fancy; but such a procedure, while it may be descriptive to some extent, does not advance us in dealing with the condition, and might be misunderstood.

"D.A.H." is always secondary. Its primary cause may be found as far back as the family history where life began under the burden of some hereditary taint, but usually the primary factor will be found as some infection, accident, injury, or in single or repeated mental shocks. Such events will be evident in the history of the individual as a turning-point in his life, as since then he has been unable to make the physical effort he had formerly been able to accomplish without distress.

As a matter of fact, the condition of the circulatory system during an acute attack of fever does not differ materially from that which we find in D.A.H. In both we have the same breathlessness, palpitation, precordial pain on exertion, and vasomotor disturbances on changes in position or after exertion; in some cases the same fast pulse; in others, like typhoid or cerebro-spinal fever, a relatively slow pulse. Our custom, when these symptoms appear during the course of a fever, is to return them under the nomenclature of the infection; when they are present after all obvious signs of the illness have disappeared, to speak of them under the diagnosis of D.A.H.

It has become so usual to consider that all cases of D.A.H. must be accompanied by a rapid pulse while at rest and after exertion, that I give the following case report of a patient with a comparatively slow pulse, but who has undoubtedly suffered from the condition since boyhood.

Pte. B., 26th Battalion C.E.F., aged 38; born in England. Total service thirty-four months, in France six months.

Complaints. — Breathlessness, dizziness, precordial pain, exhaustion.

Family History.—Mother, aged 68, has always been nervous and weak. Father died of cancer of stomach, aged 56. Five brothers and five sisters. One brother killed in the Somme fighting, another discharged from the army as medically unfit, cause not known; the remainder healthy as far as he knows.

Personal History.—The patient had measles in childhood; rheumatic fever in 1909, when he was in bed for eleven weeks. He has had three attacks of acute tonsillitis. He was not able to play games at school because he was never strong enough. He worked at his trade of carpenter in England with occasional spells of weakness and dizziness until 1898, when he joined the Coldstream Guards as pioneer corporal, and served with them in England and South Africa. During this service he had frequent fainting attacks, and was discharged as medically unfit in May, 1906. He went to Canada in 1911, and worked at his trade with a few interruptions on account of weakness and dizziness. In 1914 he joined the 26th Battalion, and was discharged medically unfit on July 6th, 1915. He then joined the militia of Canada in August, 1915, and did home duty until joining the —— Battalion as sergeant-major. He did eight months' training in Canada, carrying on with difficulty, as he constantly fell out of route marches on account of breathlessness and weakness, and had frequent fainting spells. He did five months' training in England with similar complaints. He reverted to a private and went to France in October, 1917, but was unable to carry on either as regards route marches or front line work, and was evacuated to England on March 15th, 1918, as D.A.H.

Condition on Admission.—Height 6 ft.; weight 164 lb.; extremely depressed and expression listless; tonsils ragged, not enlarged; teeth good; blueness of the hands; no clubbing of the finger-nails. There is not an area of hyperaesthesia. *Urine:* Specific gravity 1018, acid, no albumin, no sugar. Eye and knee reflexes normal. He had an occasional spasmodic twitching of the muscles in different parts of the body. *Circulatory System:* Pulse 60; after a measured exercise 100, in one minute 60. Heart apex beat fifth left interspace in nipple line fairly diffuse. Area of cardiac dullness: left limit outside left nipple line 12 cm. from the mid-sternum. *Sounds:* A faint systolic murmur in all areas, heard on lying down only. Rhythm irregular; immediately after exercising the disturbance disappears; with deep respirations the irregularity is increased.

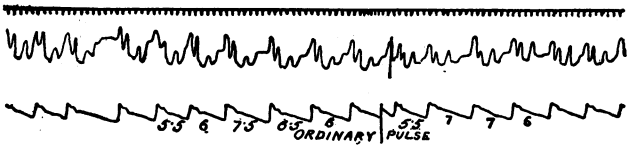

Fig. 1.—Pulse tracing with ordinary breathing.

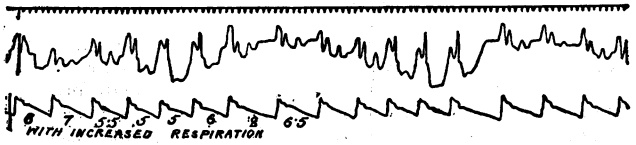

Fig. 2.—Pulse tracing with forced breathing.

Under digitalis, ɱxx four times a day for four days, the pulse remains as shown in the tracing. Under tincture of belladonna, ɱx four times a day for four days, the rhythm became quite regular, and was then not disturbed by increasing the respirations.

While it is not usual for these cases to be accompanied by a gross pathological lesion, the presence of such a change does not prohibit a coincident D.A.H. which may depend upon the same or some other etiological factor. In any case an obvious lesion, when present, is the chance involvement of a susceptible tissue, and is quite apart from the actual bodily changes which are present in D.A.H. I might express this in a different way as "history of rheumatic fever, typhoid fever, or any other illness is of sufficient importance to be considered by itself, quite apart from any local change."

In the case reported we have (*a*) disordered action of the heart which has been present since boyhood; (*b*) a pathological change in the heart (hypertrophy and some irregularity of the *a-c* interval); (*c*) a dominant vagus nerve.

In the ordinary normal person we do not find the nervous connexions of the heart especially evident, as they